



Joint Capabilities Development Process: Impact on the PPBS

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Director, Plans & Programs
Defense Research and Engineering**

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A Focus on Revolutionary Advances



Stealth



Adaptive Optics and Lasers



GPS



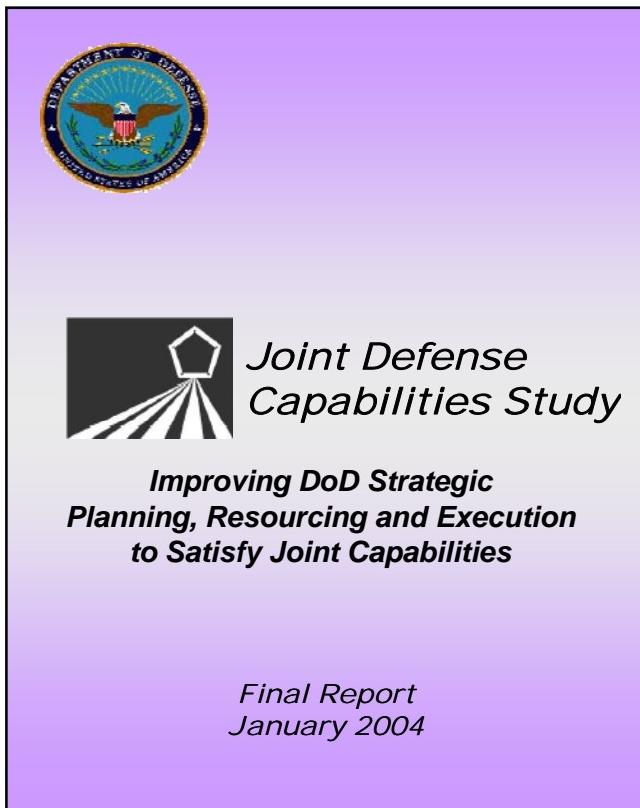
Night Vision



Phased Array Radar



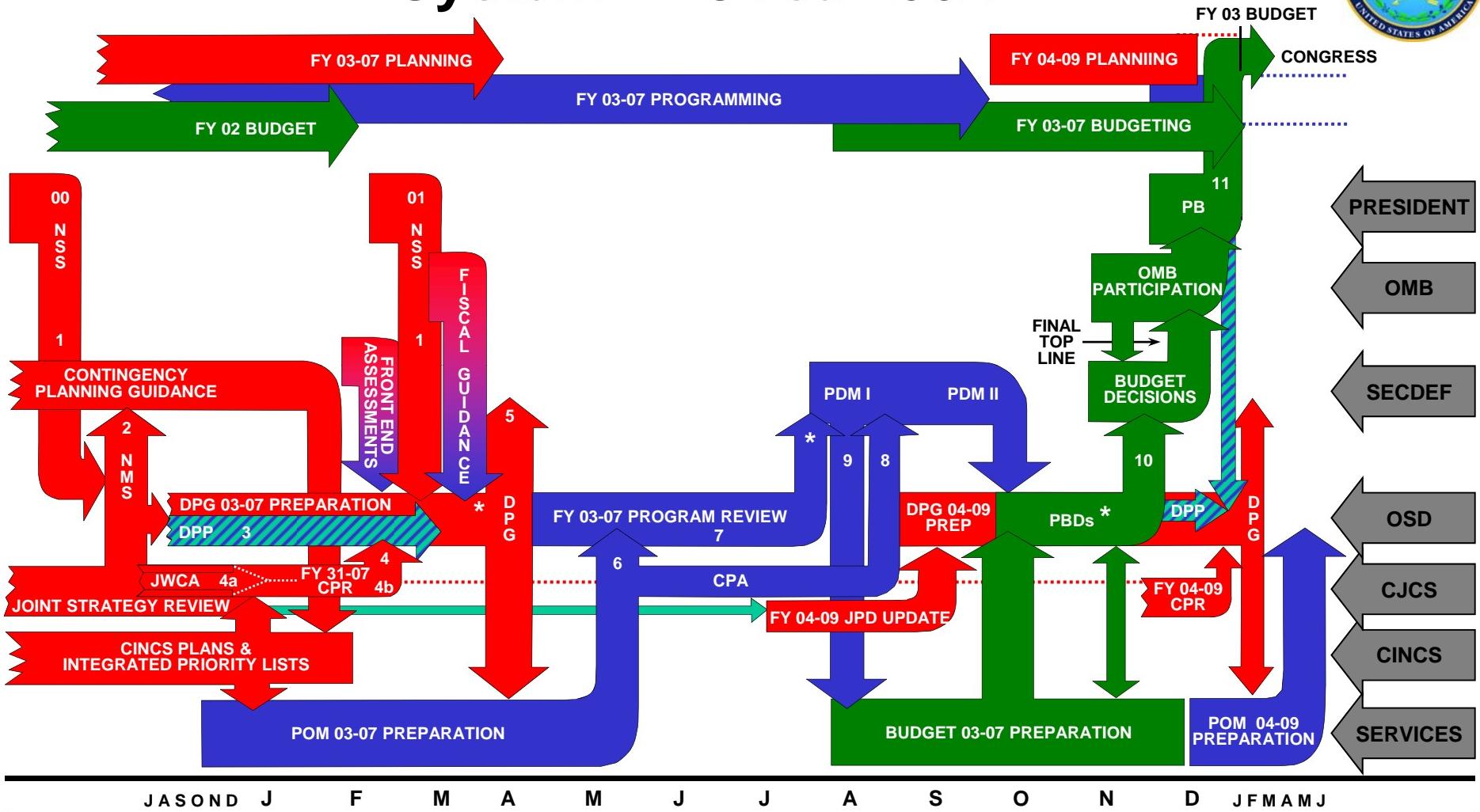
The Need For Change



“The resourcing function focuses senior leadership effort on fixing problems at the end of the process, rather than being involved early in the planning process.”

The Joint Defense Capability Study, Final Report, Jan 2004

Defense Planning, Programming & Budgeting System — Circa 2002



1. National Security Strategy
2. National Military Strategy
3. Defense Program Projection
- 4a. Joint Warfighting Capabilities Assessment
- 4b. Chairman's Program Recommendations
5. Defense Planning Guidance

6. Program Objectives Memoranda
 7. Program Review
 8. Chairman's Program Assessment
 9. Program Decision Memoranda
- * Potential Defense Resources Board (DRB)/Expanded DRB

10. Program Budget Decisions
11. President's Budget



Future Battlespace





The Challenge: Pace of Technology

“Moore’s Law” → Computing doubles every 18 months

“Fiber Law” → Communication capacity doubles every 9 months

“Disk Law” → Storage doubles every 12 months

Defense Acquisition Pace (*circa 2003*)

F-22 Milestone I: Oct 86 IOC: Dec 05*

Comanche Milestone I: Jun 89 IOC: Sep 09

* Computers at IOC are 512 X faster, hold 65,000 X bits of information than they did at MS I

Technology growth is non-linear...
Acquisition path has been linear



The Need for Transformation



“The United States will ... transform America’s national security institutions to meet the challenges and opportunities of the twenty-first century.”

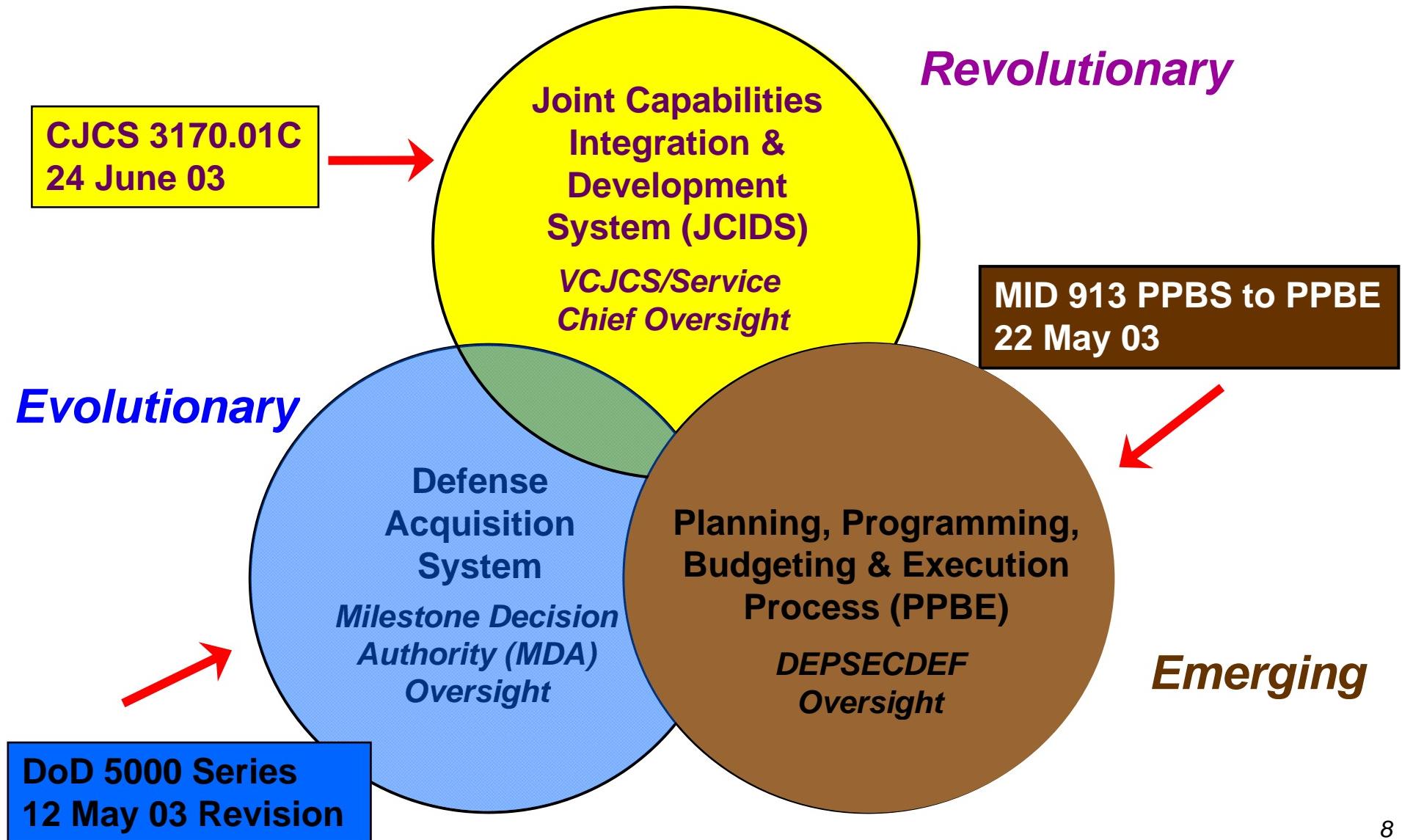
President George W. Bush,
September 2002

“The Department currently is pursuing transformational business and planning practices such as adaptive planning, a more entrepreneurial, future-oriented capabilities-based resource allocation process, accelerated acquisition cycles built on spiral development, out-put based management, and a reformed analytic support agenda.”

Secretary of Defense Donald Rumsfeld,
Transformation Planning Guidance
April 2003



Acquisition Decision Support Systems In Transformation



Previous Requirements, Acquisition, and Planning, Programming & Budgeting Process



Requirements

- Service, not Joint focused
- Joint warfighting needs not prioritized
- Systems not necessarily integrated
- Duplication existed, particularly in smaller programs
- Evolutionary Acquisition not well institutionalized

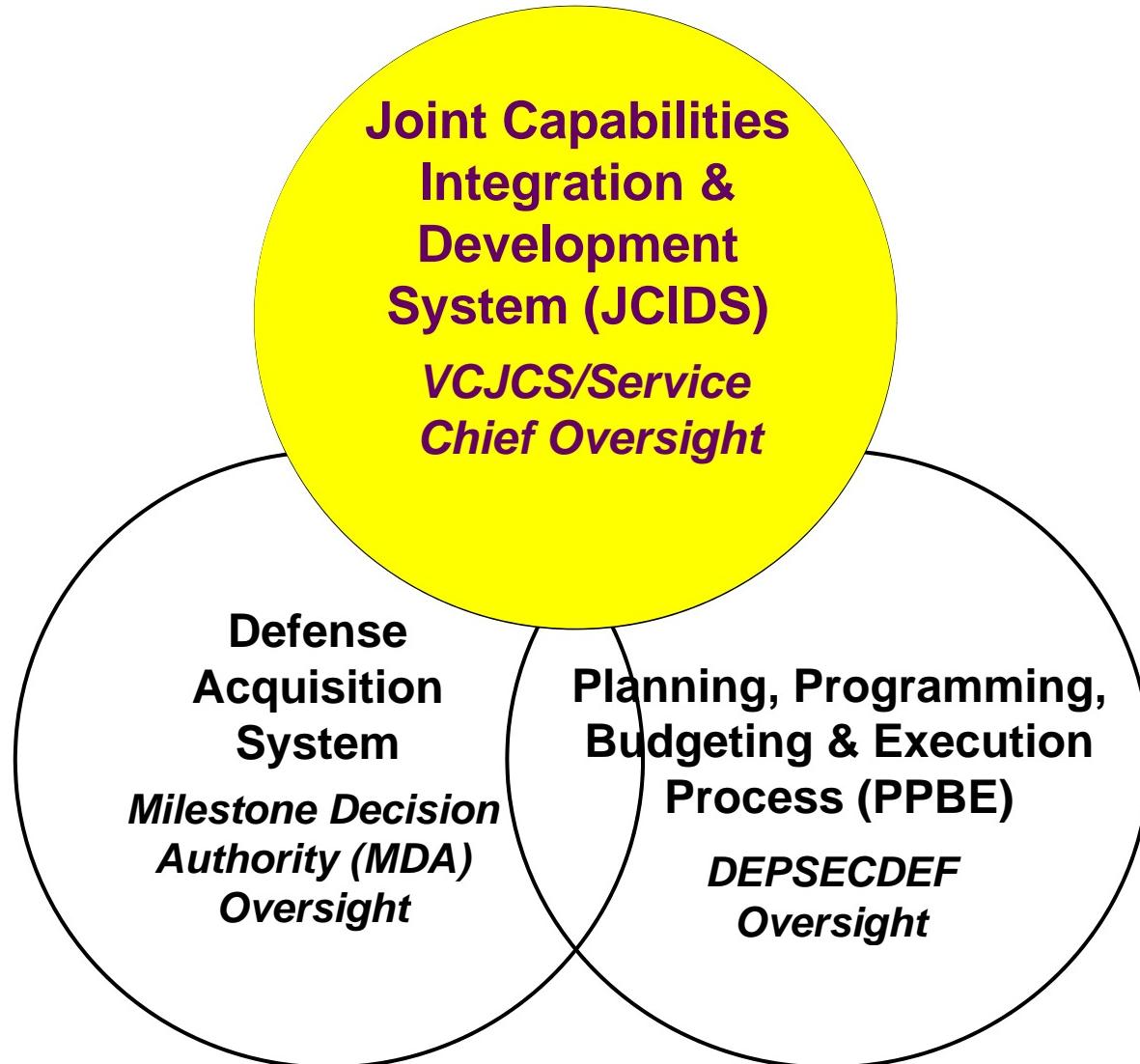
Acquisition

- Policies overly prescriptive
- Acquisition environment did not foster efficiency, creativity and innovation
- Evolutionary Acquisition not well institutionalized

PPBS

- Strategic planning process did not drive identification of needs for military capabilities
- Imposed fiscal discipline but did not integrate strategy into a coherent defense program

Acquisition Decision Support Systems In Transformation



US Capabilities-Based Planning

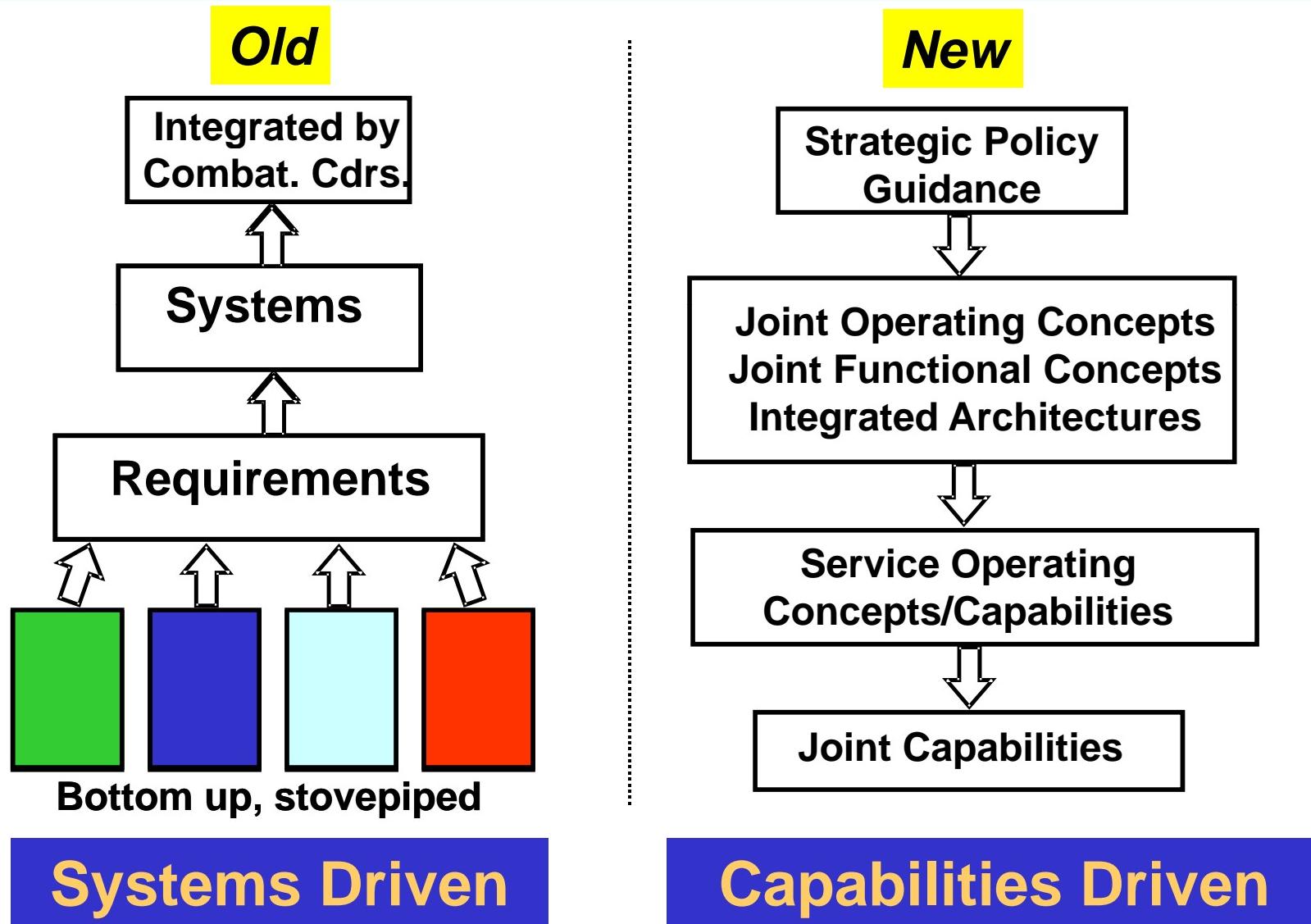


"A central objective of the Quadrennial Defense Review was to shift the basis of defense planning from a "threat-based" model that has dominated thinking in the past, to a "capabilities-based" model for the future. This capabilities-based model focuses more on how adversaries might fight, rather than specifically whom the adversary might be or where a war might occur. It recognizes that it is not enough to plan for large conventional wars in distant theaters. Instead the United States must identify the capabilities required to deter and defeat adversaries who will rely on surprise, deception, and asymmetric warfare to achieve their objectives."

-- *Donald Rumsfeld, Secretary of Defense, Sept. 30th, 2001, Foreword to the Quadrennial Defense Review Report*



New Process



Current (How) vs Future (What) Perspectives



Shoot

Target

Current dominant perspective

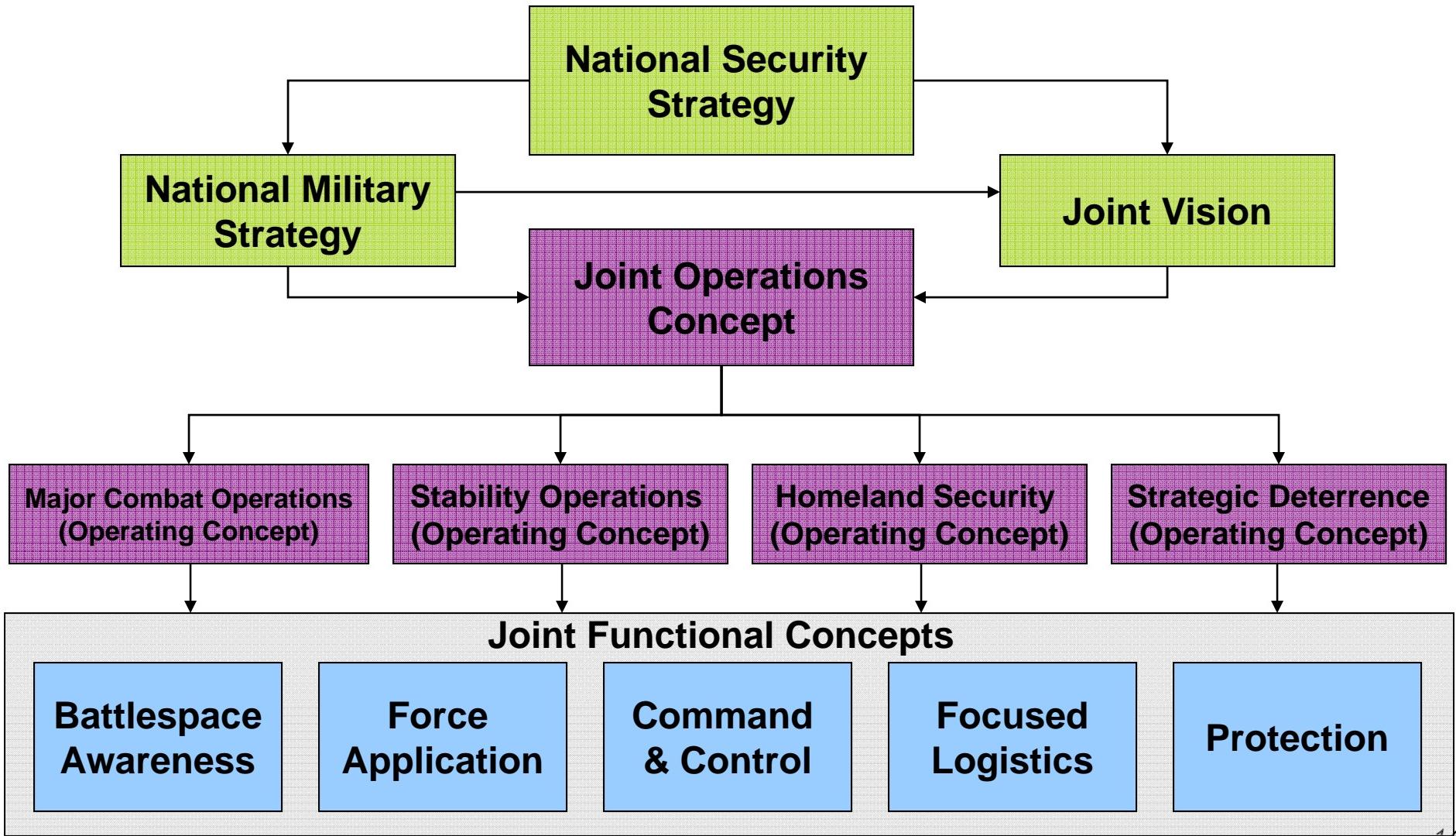
Shoot

Target

Future model perspective



Hierarchy of Joint Concepts





Functional Concepts

BATTLESPACE AWARENESS

Collect and analyze battlespace information

COMMAND AND CONTROL

Develop alternatives and disseminate orders

FORCE APPLICATION

Cause effects on the enemy

PROTECTION

Prevent an enemy's effect on us

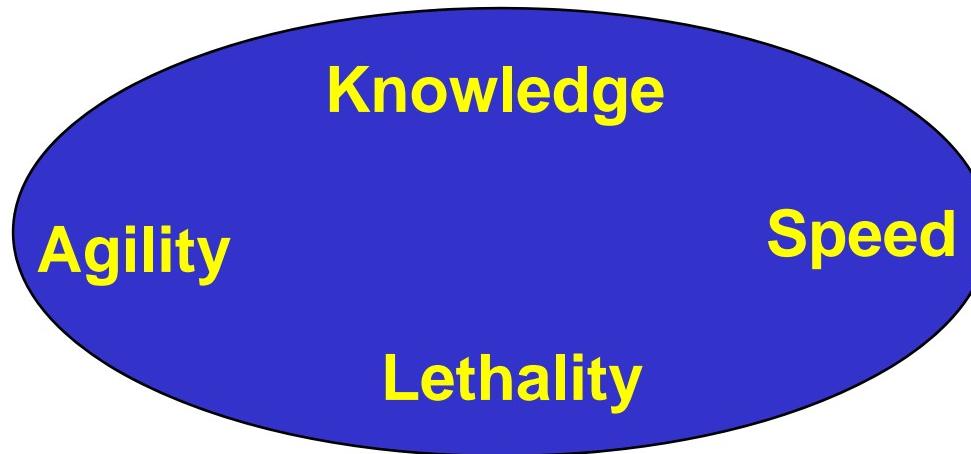
FOCUSED LOGISTICS

Sustain and support the force



Transformation Technology Initiatives

- Transformation Attributes



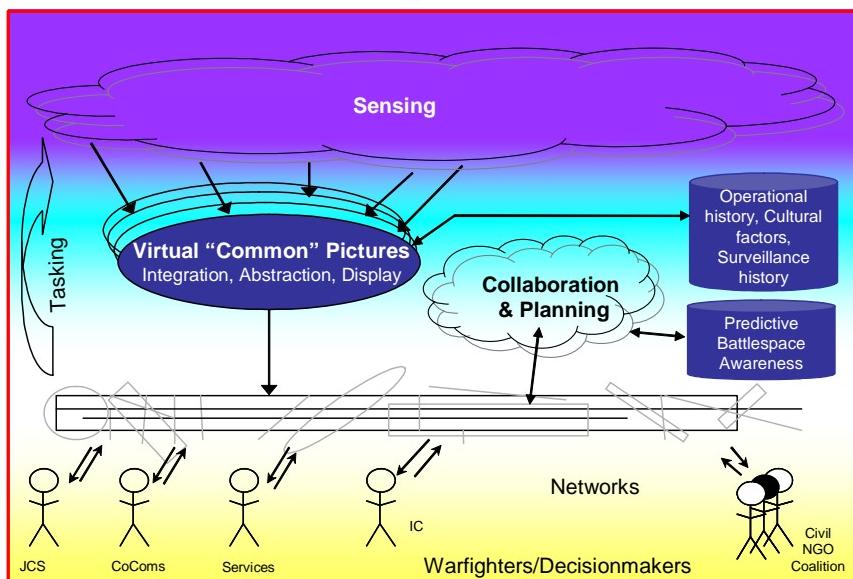
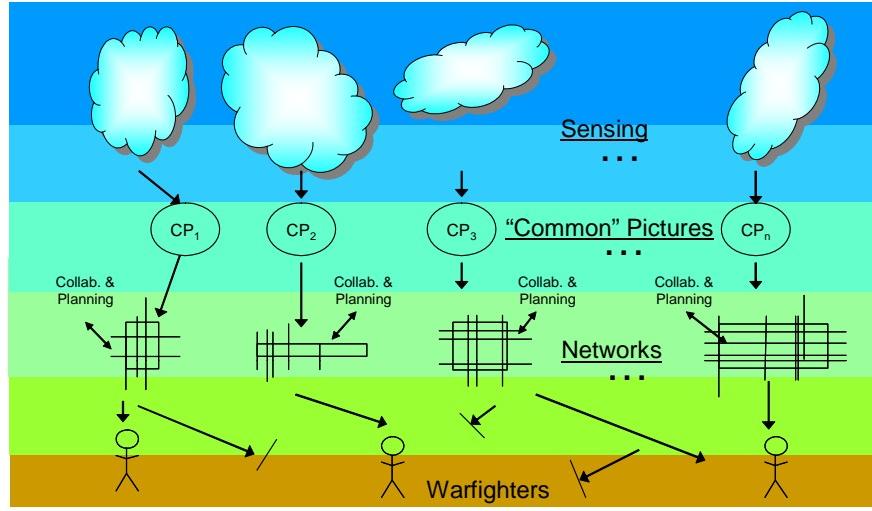
- DDR&E Initiatives
 - Surveillance and Knowledge Systems
 - Energy and Power Technologies
 - National Aerospace Initiative
- Other Key Thrusts
 - Objective Force (Army)
 - Future Satellite Force (Air Force)
 - Electric Ship (Navy)

What Technologies Bring About Tomorrow's Operational Advantage?



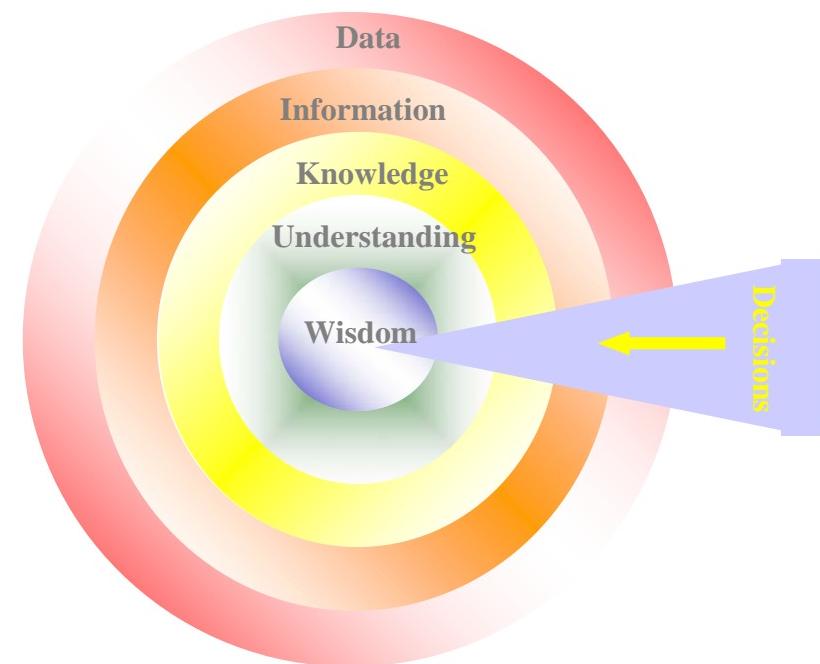
Surveillance & Knowledge

Enabling Integrated C4ISR



Technology Foci

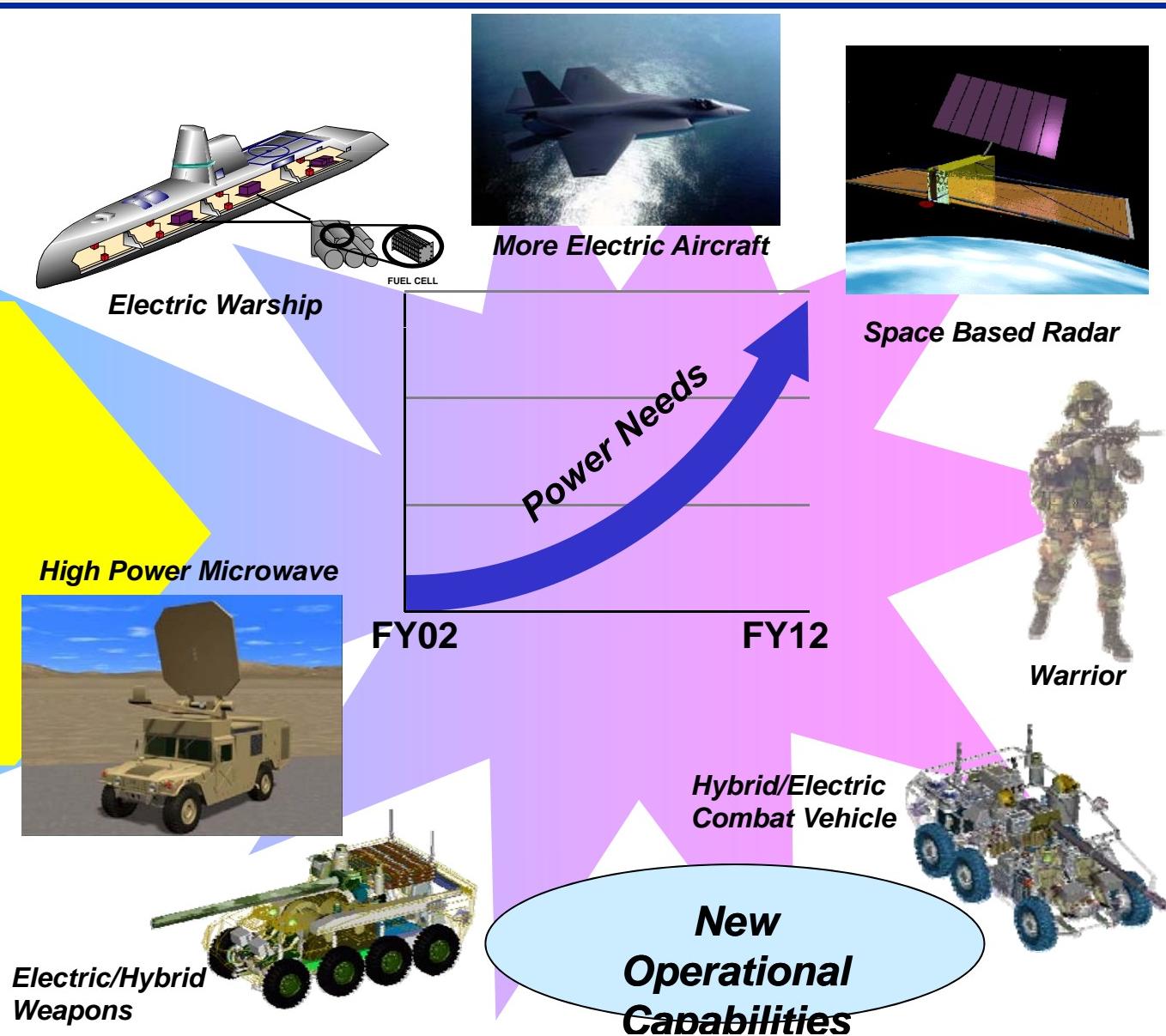
- Adaptive Networks
- Ubiquitous Sensors
- Decision Aids



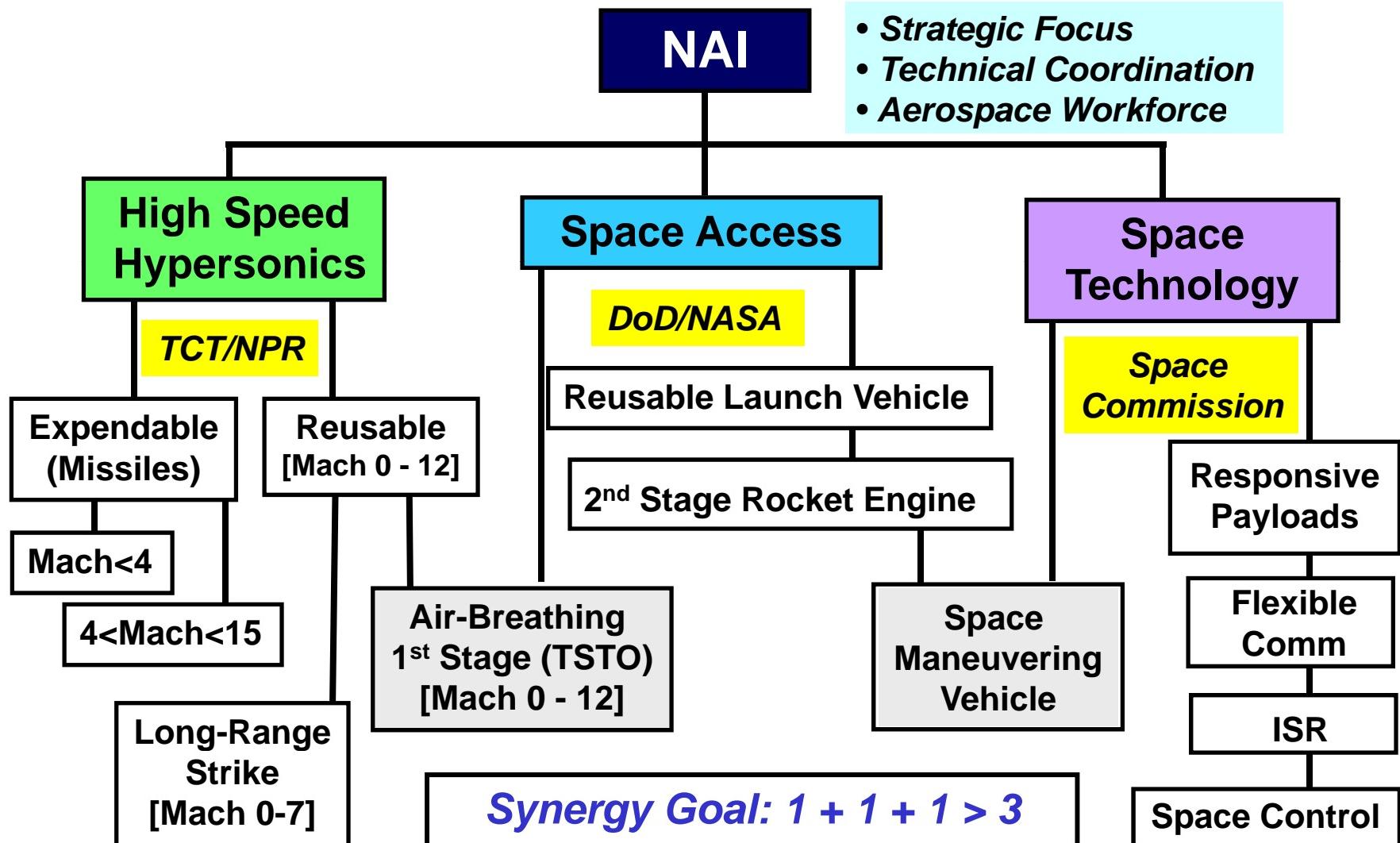
Power Technologies ...Pervasive & Enabling



| POWER GENERATION |
|-------------------------------------|
| • Fuel Cells & Fuel Reforming |
| • Novel Power |
| ENERGY STORAGE |
| • Batteries |
| • Capacitors |
| POWER CONTROL AND DISTRIBUTION |
| • Switching & Conditioning |
| • Power Transmission & Distribution |
| • Thermal Management |



National Aerospace Initiative Technology Framework





The Objective Force

Today



*~100 lb.
load*

*From Platforms to
System of Systems*



*70+
tons*



*0
mph*

*C-130-Like
Transportability*

Future Force

*< 40 lb.
effective
load*

Fully networked

*< 20
tons*

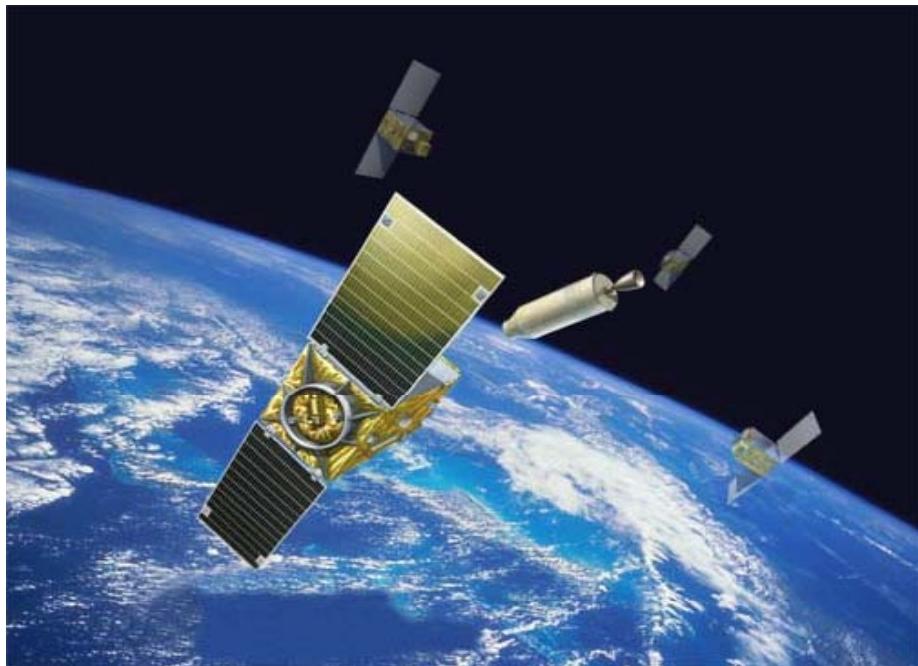


*> 40
mph*

Accelerating Transformational Capabilities



The Future Satellite Force



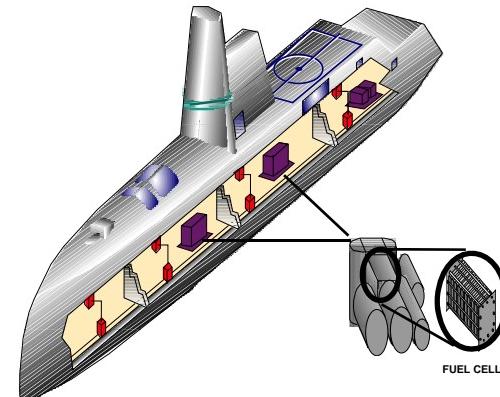
The XSS-11 Small Sat

- First demonstration of a fully autonomous satellite designed for orbital navigation around another resident space object (RSO)
- Demonstrates:
 - Software logic and algorithms to safely rendezvous, navigate around, and inspect an RSO
 - Revolutionary mission planning and operation tools
 - Collision avoidance — space situational awareness

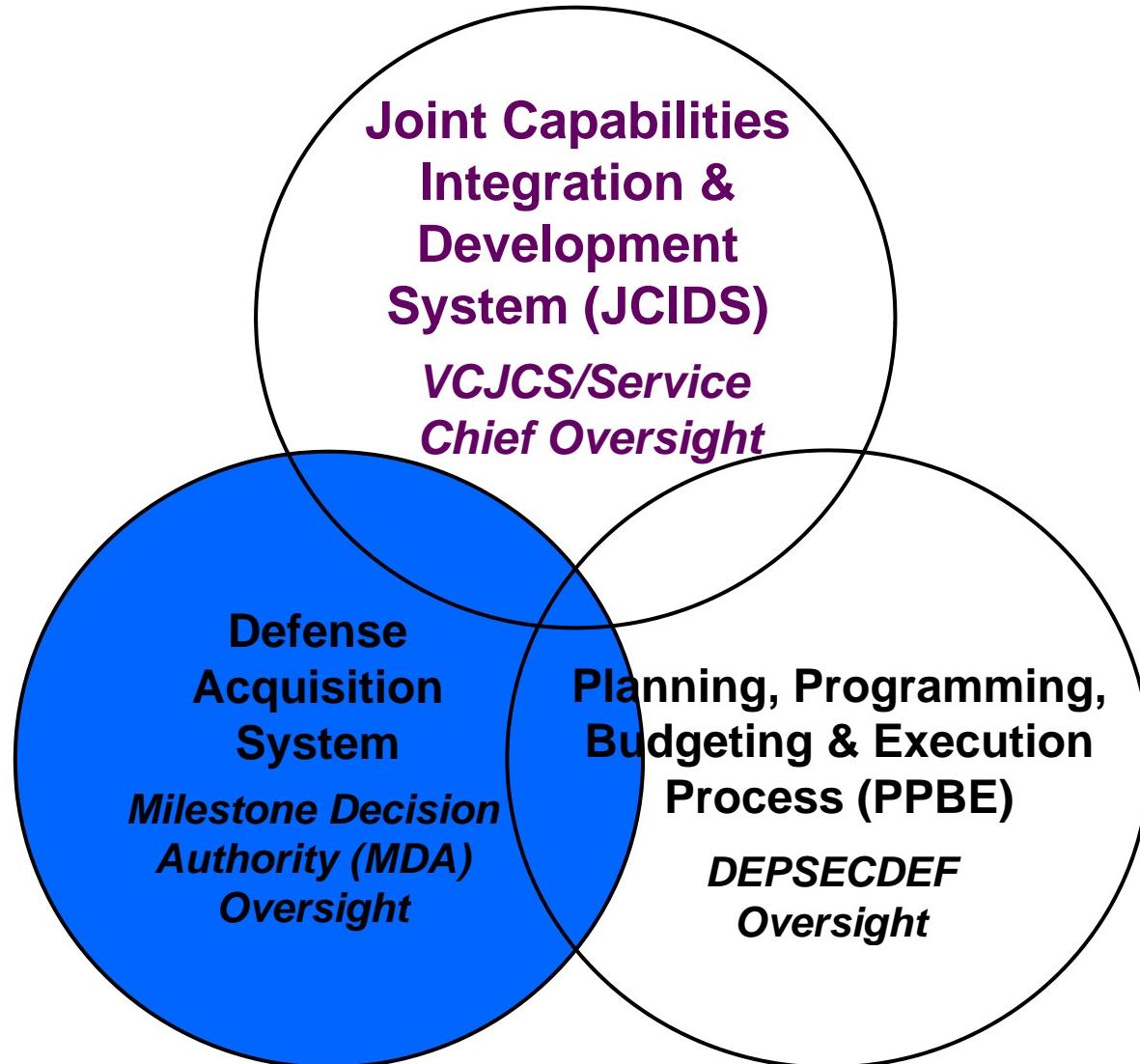


The Electric Navy

- **Enables Transformational Weapons Systems**
 - Electromagnetic Guns
 - Shipboard Laser Systems
 - Adv. High Powered Sensors
- **Improves Survivability**
 - Rapid and anticipatory reconfiguration of power and systems
- **Reduces Noise**
 - Eliminates propulsion gear noise
 - Enables lower speed propellers
 - Enables silent watch capabilities
- **Reduces Life Cycle Costs**
 - Reduction in Number of Prime Movers
 - Significantly Greater Fuel Efficiencies
 - Eliminate high maintenance hydraulic systems



Acquisition Decision Support Systems In Transformation





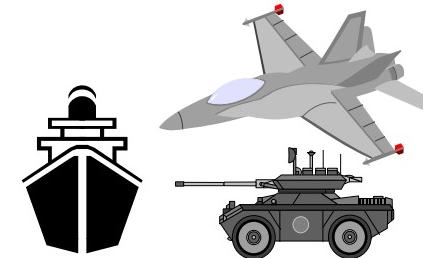
Acquisition Model Evolution

All Services are moving their acquisition processes

FROM



S&T



Acq

TO

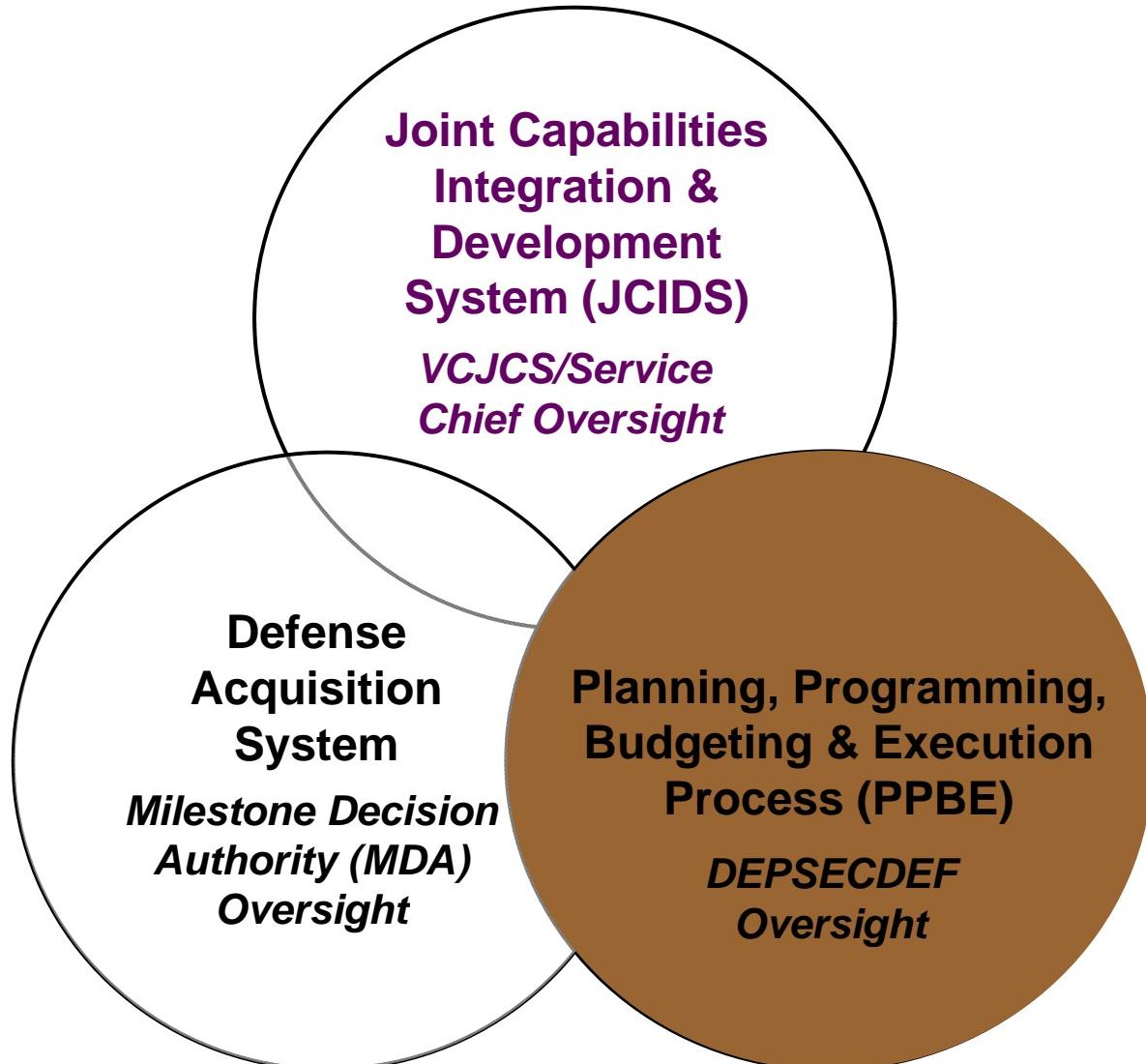
S&T

Acq

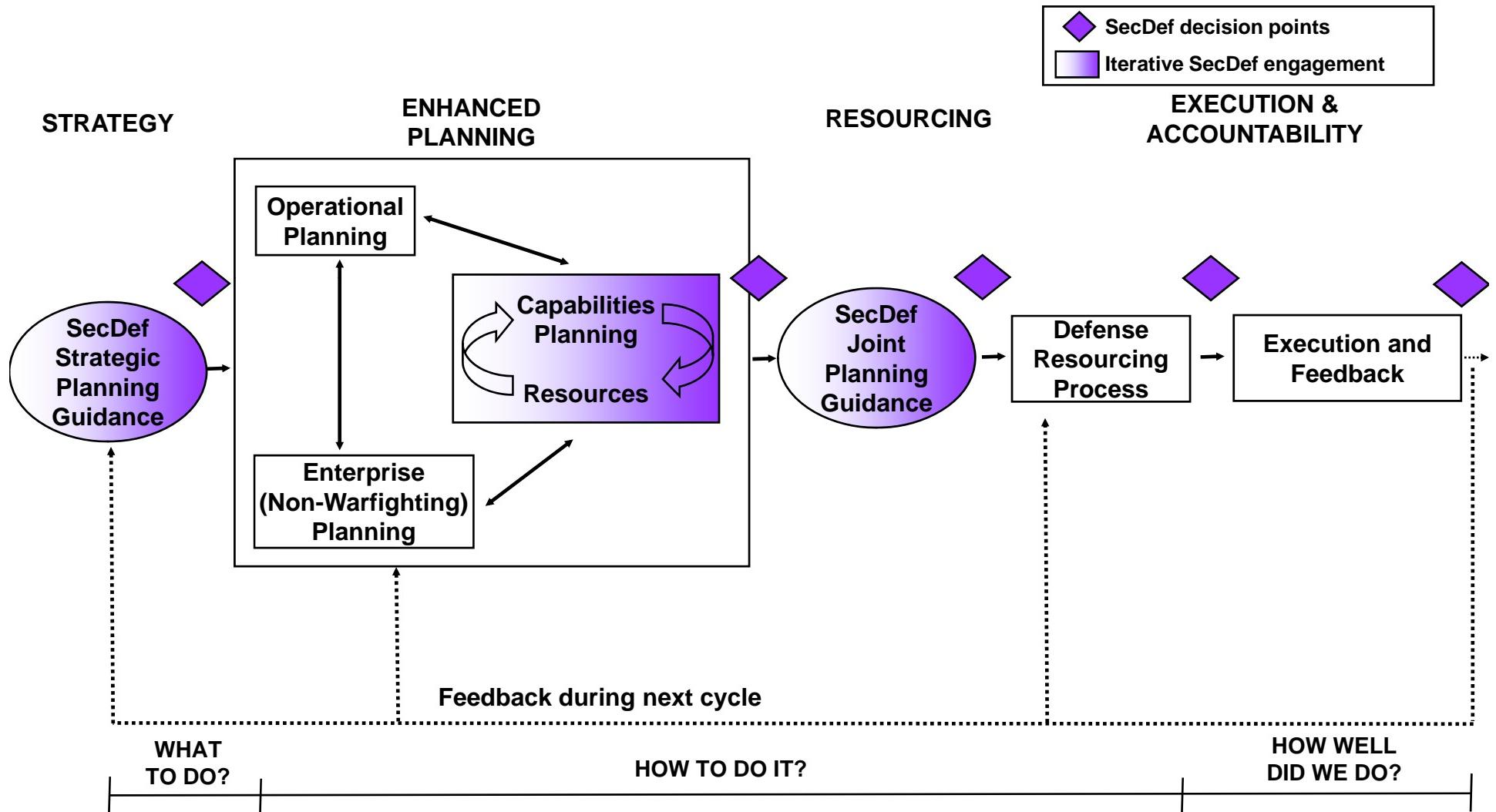
Operational
Requirements
(Warfighter)

*Acquisition and
Tech Transition
are a contact sport*

Acquisition Decision Support Systems In Transformation



The “End State” Process – What’s Needed



Management Initiative Decision (MID) 913



May 2003: Replaced old PPBE with new PPBE

- Move to a two-year cycle
- Enhanced Planning Process: Strategic Planning Guidance (SPG) and Joint Programming Guidance (JPG) replace DPG
- Off-year SPG/DPG is optional (at the discretion of SECDEF)
 - Will not introduce major changes in off-year
- Off-year review focus on execution and performance
- Incorporate metrics and cost models
 - Focus on outputs: what are we getting for our money?
- Over time, metrics will become the analytical underpinning to ascertain whether the appropriate allocation of resources exists

Major Components of New Process



- **Program Change Proposal (PCP) = Big Ticket Items**
- **Budget Change Proposal (BCP) = Small Adjustments**
- **Two year cycle:**
 - Even Years: Budget completely revised
 - Odd Years: Budget changes tend to be small, “fact of life”

FY 2005 – 2009 Program / Budget Schedule



- Aug **PCPs due to OSD (PA&E)**
- Aug **PCP Dispositions issued**
- Sep **Detailed info submitted for accepted PCPs**
- Oct **BCPs due to OSD (Comptroller)**
- Nov **PDM issued**
- Nov **1st Round PBDs completed**
- Nov **Top line guidance from OMB**
- Dec **Major Budget Issues**
- Dec **Final FY 2005 Budget Decisions**
- Dec **FY 2005 President's Budget Lock**
- Jan/Feb **Lessons Learned**



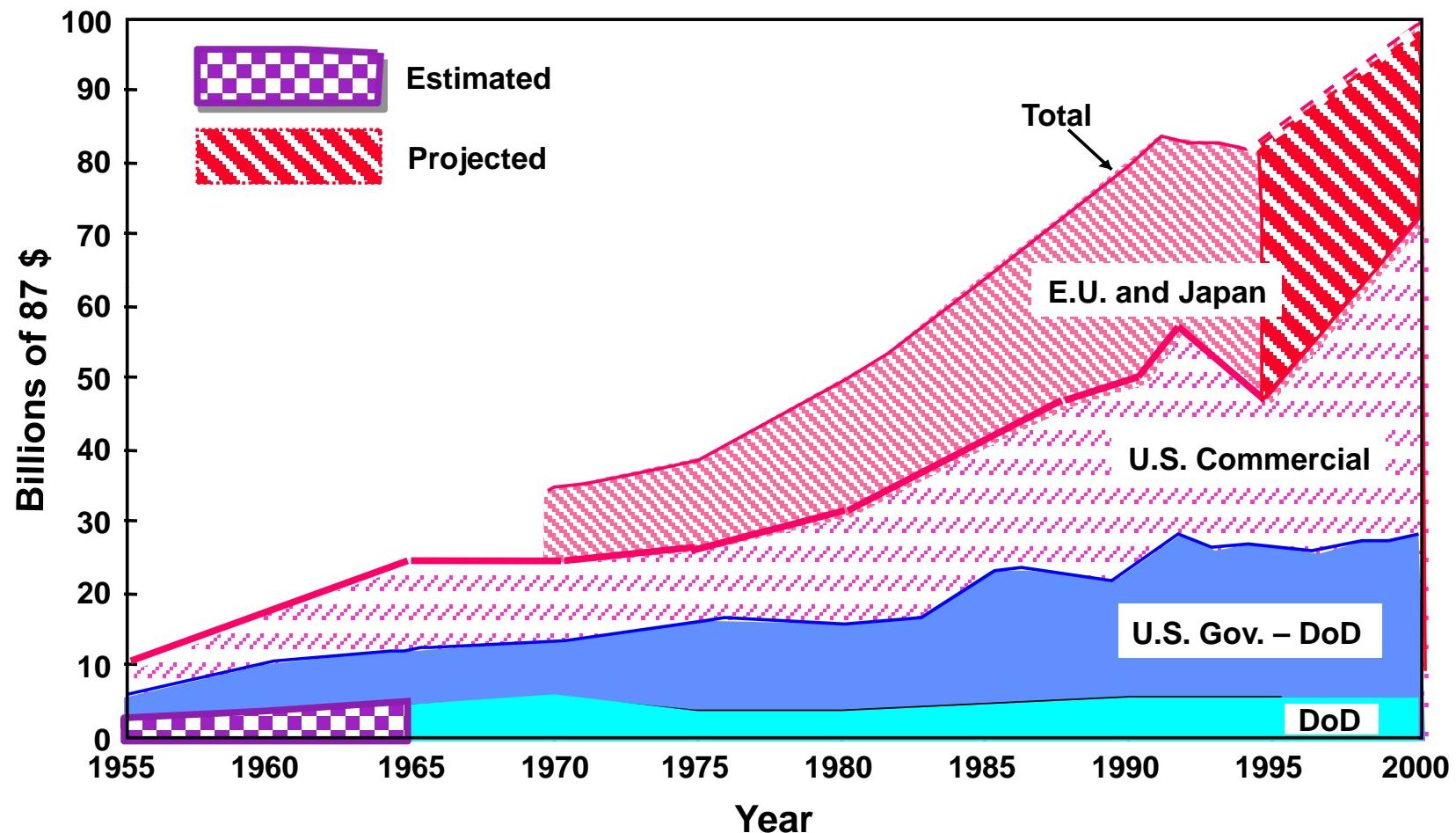
Summary

- SecDef direction to “transform” the DoD is on track
 - Transformation implies more substantive change
 - Larger change is aided by budget stability
- DoD business practices are evolving on three primary axes simultaneously
 - JCIDS
 - Acquisition
 - PPBE
- Current (FY05) DoD program reflects transformation; New PPBE system tries to preserve it!



Backup Slides

Worldwide Research Base is Growing



Source: Report of the Defense Science Board Task Force on the Technology Capabilities of Non-DoD Providers; June 2000; Data provided by the Organization for Economic Cooperation and Development & National Science Foundation



FY05 RDT&E Budget Request

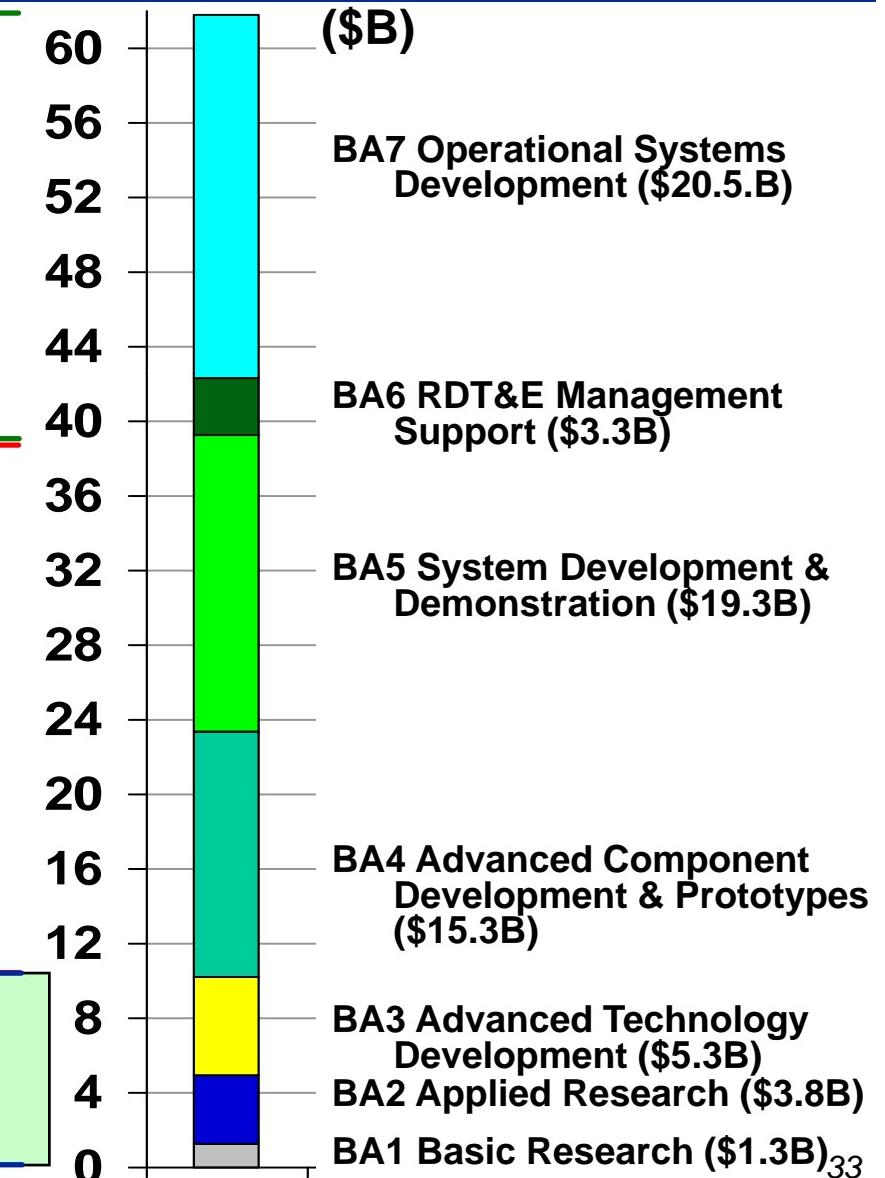
FY05 RDT&E = \$68.9B
requested
(Budget Activity 1-7)

(BA6 + BA7 = \$23.7B)

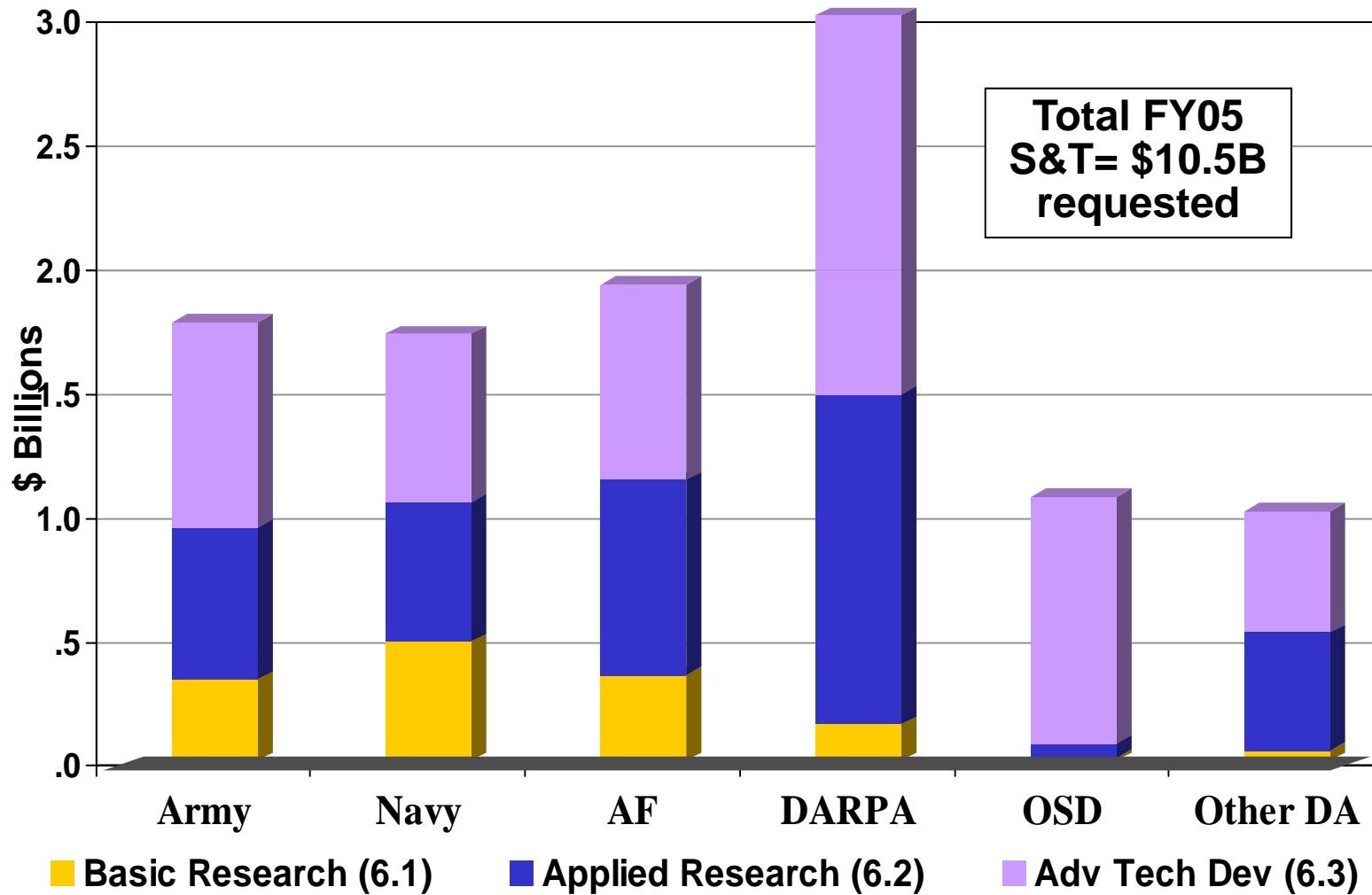
Development
(BA4 + BA5 = \$34.5B)

Technology Base
(BA1 + 2) = \$5.1B

Science and Technology
(6.1 + 6.2 + BA3 = \$10.5B)
15% of RDT&E

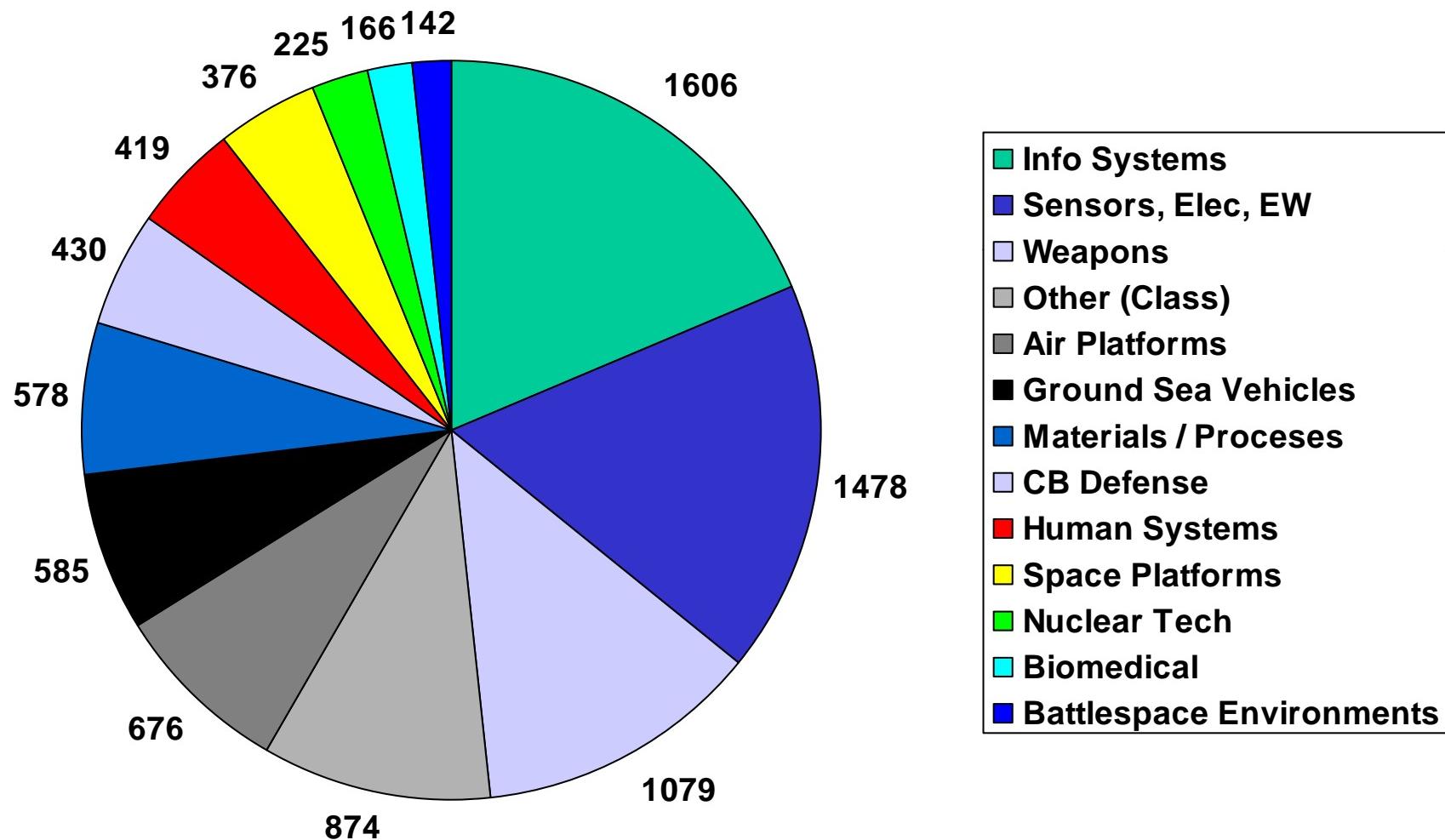


FY05 Budget Request DoD S&T



FY05 PBR

-- “Reliance Funding” by Technical Capability Area--



Definition of Transformation

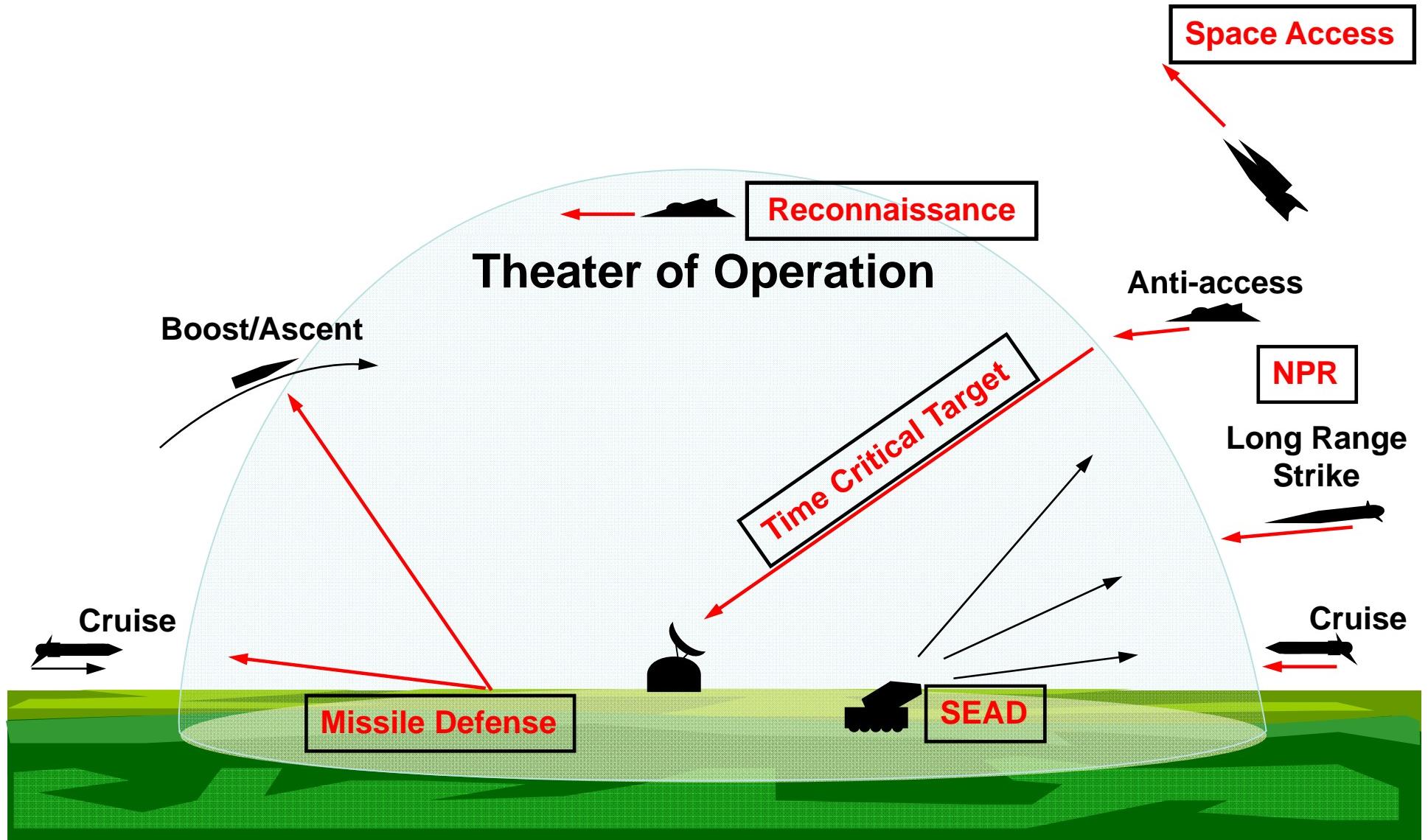


**“The Evolution and Deployment of Combat Capabilities
That Provide Revolutionary or Asymmetric
Advantages to Our Forces”**

- QDR (Sep 30, 2001)



Value of Speed

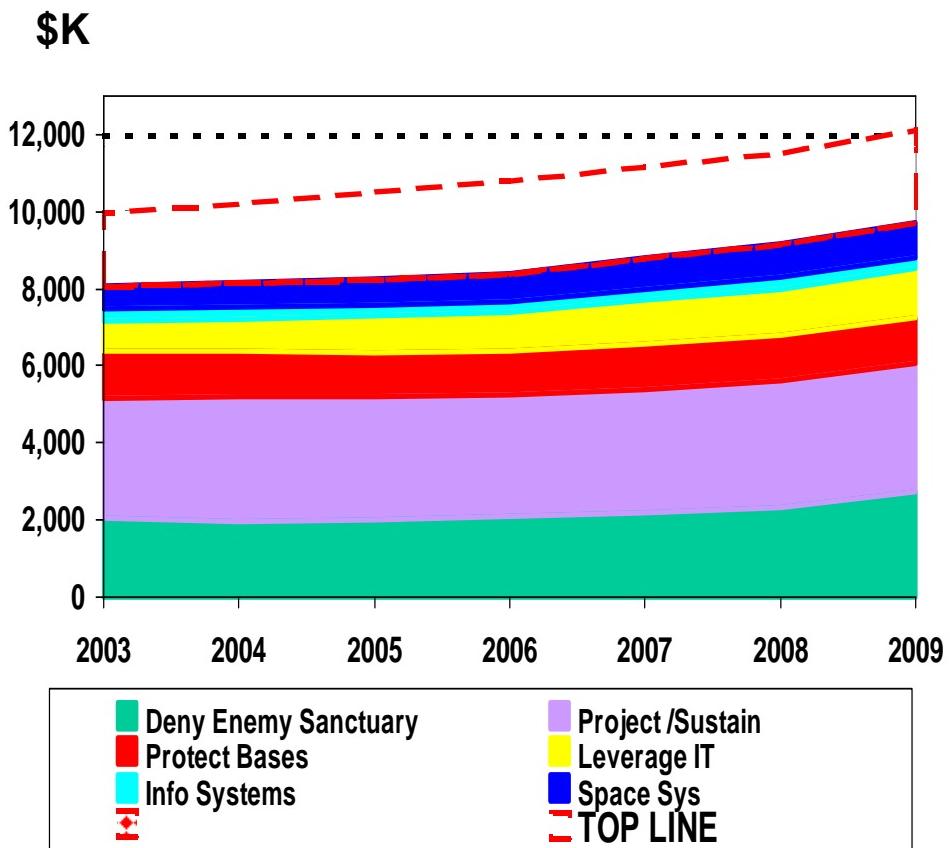


S&T Program Characterized By Quadrennial Defense Review Goals



- At Project Level, about 79% of total DoD S&T program is invested in QDR Goals
- The remaining 21% includes:
 - Basic Research (~\$1.3B)
 - Key Transformation enabler
 - Environmental Programs (~\$50M)
 - Enabling Technologies
 - Electronics
 - Materials, etc.
 - Joint Experimentation (~\$175M)
 - Classified Programs (~\$800M)

Investment in QDR Transformational Operational Goals



FY 2004-2009 Defense Planning Guidance



- “The Department’s current planning, programming, budgeting and acquisition systems are rigid, unresponsive and ill-suited for a dynamic and uncertain security environment.
- DoD needs to streamline and integrate PPBS and the major acquisition and requirements processes with particular attention paid to those areas where technological change occurs most rapidly.”
- Tasked the Senior Executive Council to provide a systematic approach for replacing these processes

Old Process: Annual, Consecutive-Phase PPBS



- FY 02-07 POM and prior:
 - Defense Planning Guidance (DPG) (Apr)
 - Programming (POM Development) (Jan – Sep)
 - Budgeting (BES Development / Review) (May – Dec)
 - Submission of President's Budget (Feb)
 - Congressional Review of Budget Request (Feb – Sep)
 - Congressional Authorization and Appropriation
 - Execution of Budget Authority
 - Commit, obligate, expend, and outlay funds

Defense Planning Corresponding to Four-Year Presidential Terms



Year 1 (Review and Refinement):

Early National Security Strategy (NSS)

Off-year SPG/JPG as required (at discretion of SECDEF)

Limited Changes to Baseline Program

Year 2 (Formalize the Agenda):

Quadrennial Defense Review (QDR)

– Aligned with PB submission in second year of an administration

Fiscal Guidance Issued

On-year SPG/JPG (implementing QDR)

POM/BES Submissions

Year 3 (Execution of Guidance):

Off-year SPG/JPG as required (at discretion of SECDEF)

Limited Changes to Baseline Program

Year 4 (Ensuring the Legacy):

Fiscal Guidance Issued

On-year SPG/JPG (refining alignment of strategy and programs)

POM/BES Submissions

Planning, Programming, Budgeting and Execution



- Primary Resource Management System for DoD:
 - Articulates strategy
 - Identifies size, structure and equipment for military forces
 - Sets programming priorities
 - Allocates resources
 - Evaluates actual output against planned performance and adjusts resources as appropriate

Planning, Programming, Budgeting and Execution Phases



- **Planning**
 - Assess capabilities / review threat
 - Develop resource informed guidance
- **Programming**
 - Turn guidance into achievable, affordable packages
 - Six-year program (Future Years Defense Program)
- **Budgeting**
 - Assess for efficient funds execution
 - Scrub budget years
 - Prepare defensible budget
- **Execution Review (incorporated in program/budget review)**
 - Develop performance metrics
 - Assess actual output against planned performance
 - Adjust resources to achieve desired performance goals

DepSecDef Direction for FY 2005 - 2009 Submission



- No DPG-05
 - Components comply with DPG-04 and PDM direction
- No FY05-09 Program Objective Memorandum (POM) or Budget Estimate Submission (BES) submittal to OSD
- Components instead submit Program Change Proposals (PCPs) or Budget Change Proposals (BCPs)
 - Both BCPs and PCPs will be cost neutral (offsets required)
 - PCPs resolved thru Program Decision Memorandums (PDMs)
 - BCPs resolved thru Program Budget Decisions (PBDs)

Program Change Proposals (PCPs)



- **Identify areas to take additional risk (offsets)**
 - Offsets may be used for other initiatives
- **Limited to items that exceed \$250 million across FYDP**
 - Threshold at individual programmatic issue level
 - May address smaller issues if serious programmatic problem
 - If less than \$250 million, may submit as BCP if budget year is affected
- **Must comply with PDM decisions**
- **Combatant Commanders may submit up to six prioritized PCPs regardless of dollar value**
- **Full budgetary data submitted for accepted PCPs**

Budget Change Proposals (BCPs)



- **Generally limited to fact-of-life changes:**
 - Cost increases
 - Schedule delays
 - Management reform savings
 - Workload changes
 - Budget execution experience
 - Congressional action
- **May involve FYDP years if total cost is less than \$250 million and budget year is affected**
- **Offsets required**
- **Backed up with appropriate budget exhibits**

Functional Concepts Portfolios



BATTLESPACE AWARENESS

- All source intelligence collection
- Environmental data collection
- Predictive analysis
- Knowledge management
- Own force information collection

The Goal: Sense, Orient and Predict the Battlespace to Decrease Time to Act

"Before Real Time Knowledge of the Battlespace"

Functional Concepts Portfolios



COMMAND AND CONTROL

- Common operational picture
- Joint force command and control
- Communications and computer environment

The Goal: Integrated Information Systems of Systems

"Common Knowledge Through All Echelons"

Functional Concepts Portfolios



FORCE APPLICATION

- Land Operations
- Maritime Operations
- Air Operations
- Space Operations
- Joint Targeting
- Conventional Attack
- Nuclear Attack
- Military Deception
- Computer Network Attack
- Electronic Attack
- Psychological Operations
- Special Operations
- Special Operations
- Joint Fire Support
- Suppression of Enemy Air Defense

The Goal: Apply Superior
Military Force from all
Potential Platforms

*"Multiple Force Application
Options For Commanders"*

Functional Concepts Portfolios



PROTECTION

- Personnel and Infrastructure Protection
- Computer Network Defense
- Counter-proliferation
- Non-proliferation
- Consequence Management

The Goal: Protect US Forces and Facilities From all Forms of Potential Attack

*"Total Asset Protection
Against All Potential Threats"*

Functional Concepts Portfolios



FOCUSED LOGISTICS

- Deployment Distribution
- Sustain
- Medical
- Mobility
- Logistics C2

The Goal: Deploy and Sustain US Forces Worldwide

"Total Asset Visibility"

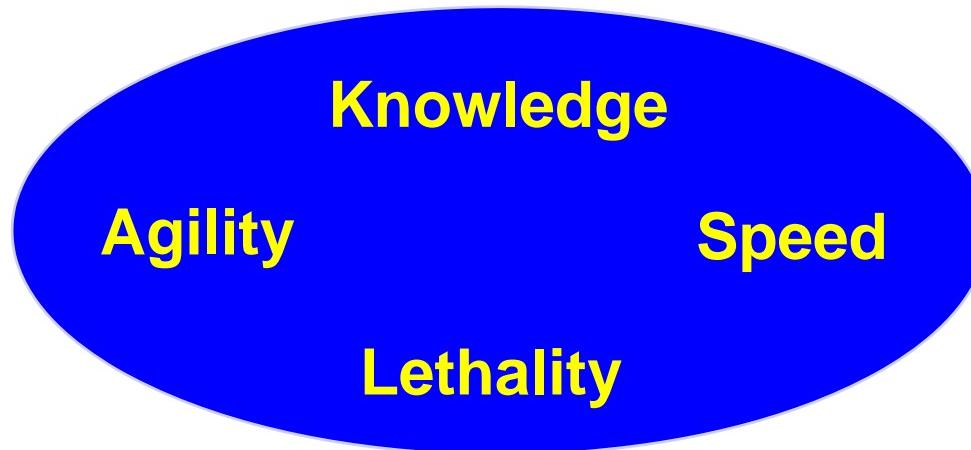


Projects Mapped to FCBs

| | Battlespace Awareness | Command & Control | Force Application | Focused Logistics | Force Protection |
|-----|-----------------------|-------------------|-------------------|-------------------|------------------|
| NAI | ★ ★ | | ★ ★ | | |
| SKS | ★ ★ | ★ ★ | ★ ★ | | ★ ★ |
| EPT | | ★ ★ | | ★ ★ | ★ ★ |
| FCS | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Technology and Transformation

Transformational Attributes



- Transformation Occurs With Leaps In Capabilities:
 - Manhattan Project—Lethality
 - Reconnaissance Satellites—Knowledge
 - Stealth—Agility
 - Ballistic Missiles—Speed

What Technologies Bring About Tomorrow's Operational Advantage?

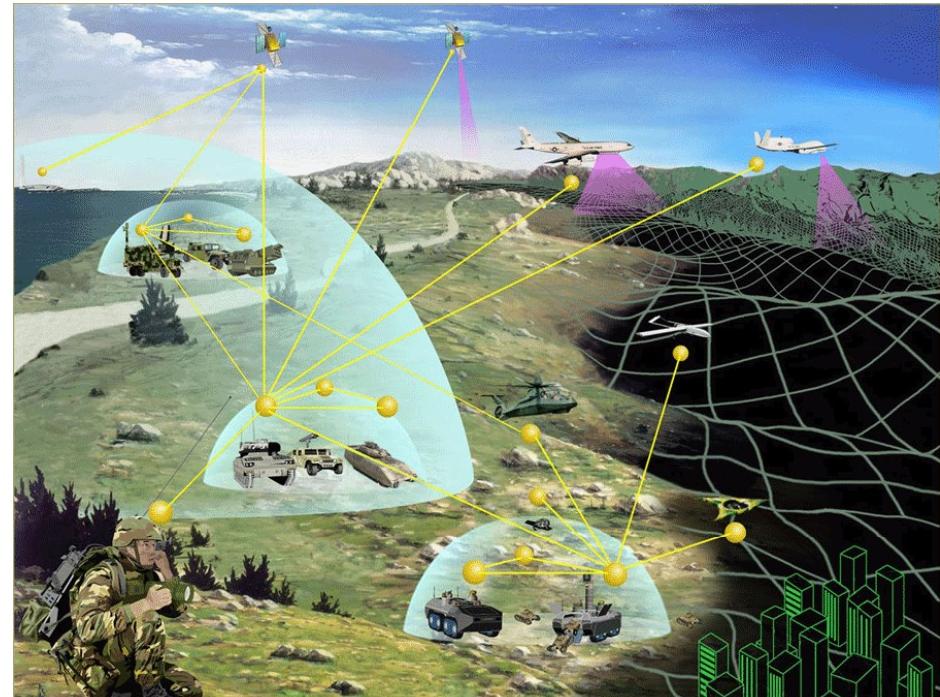
Future Combat Systems

S&T Investments to Enable the Future Force



Description

- A system of multi-functional systems enabling soldiers to operate as a integrated, distributed, networked force
- The major fighting system in the Unit of Action—strategically responsive, lightweight, lethal, survivable, with its sustaining combat support force



Major Goals

- Implement the “power of the net” to achieve commander-centric operations providing decision superiority in all battlefield functions from Finding the Enemy to Decisive Defeat—through overwhelming speed of maneuver and precision fires with minimum logistics demands.
- Provides line of sight & non-line of sight fires, troop transport in a networked system of systems